

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/05031

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C12N13/00 C12P7/40 C12P7/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N C12P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, BIOSIS, CHEM ABS Data, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|--|
| X Y | GB 1 217 035 A ((BOGO-I) BOGOCZEK R; (PLSL) POLT) 23 December 1970 (1970-12-23) page 1 -page 3; figure 2 | 1-4,6,7, 13-15 5,8-11, 16 |
| X Y | PATENT ABSTRACTS OF JAPAN vol. 012, no. 467 (C-550), 7 December 1988 (1988-12-07) -& JP 63 188385 A (SHIMADZU CORP), 3 August 1988 (1988-08-03) abstract | 1-4,6,7, 13-15 5,8-11, 16 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

5 March 2004

Date of mailing of the international search report

18/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Devijver, K

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/05031

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|---|-----------------------|
| X | HONGO M ET AL: "NOVEL METHOD OF LACTIC ACID PRODUCTION BY ELECTRODIALYSIS FERMENTATION" APPLIED AND ENVIRONMENTAL MICROBIOLOGY, WASHINGTON, DC, US, vol. 52, no. 2, August 1986 (1986-08), pages 314-319, XP000852799 ISSN: 0099-2240 | 1-4, 6, 7, 9-15 |
| Y | the whole document | 5, 8, 16 |
| Y | XU T: "Development of bipolar membrane-based processes" DESALINATION, ELSEVIER SCIENTIFIC PUBLISHING CO, AMSTERDAM, NL, vol. 140, no. 3, 20 November 2001 (2001-11-20), pages 247-258, XP004329758 ISSN: 0011-9164 page 253 -page 255 | 5, 8-11 |
| Y | BAILLY M: "Production of organic acids by bipolar electrodialysis: realizations and perspectives" DESALINATION, ELSEVIER SCIENTIFIC PUBLISHING CO, AMSTERDAM, NL, vol. 144, no. 1-3, 10 September 2002 (2002-09-10), pages 157-162, XP004386212 ISSN: 0011-9164 the whole document | 5, 8-11 |
| Y | NOMURA Y ET AL: "LACTIC ACID PRODUCTION BY ELECTRODIALYSIS FERMENTATION USING IMMOBILIZED GROWING CELLS" BIOTECHNOLOGY AND BIOENGINEERING, vol. 30, no. 6, 1987, pages 788-793, XP002272648 ISSN: 0006-3592 cited in the application the whole document | 16 |
| A | VELIZAROV SVETLOZAR: "Electric and magnetic fields in microbial biotechnology: Possibilities, limitations, and perspectives" ELECTRO- AND MAGNETOBIOLOGY, vol. 18, no. 2, July 1999 (1999-07), pages 185-212, XP008028208 ISSN: 1061-9526 cited in the application page 201 | 1-16 |
| | --- | |
| | -/-- | |

INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 03/05031

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| T | <p>LI H ET AL: "An electrokinetic bioreactor: using direct electric current for enhanced lactic acid fermentation and product recovery"</p> <p>TETRAHEDRON, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 60, no. 3, 12 January 2004 (2004-01-12), pages 655-661, XP004482879</p> <p>ISSN: 0040-4020</p> <p>the whole document</p> <p>-----</p> | 1-16 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/05031

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| GB 1217035 | A | 23-12-1970 | BE 712899 A | 31-07-1968 |
| | | | CH 490305 A | 15-05-1970 |
| | | | CS 182753 B2 | 31-05-1978 |
| | | | DE 1768052 B1 | 01-07-1971 |
| | | | FR 1564115 A | 18-04-1969 |
| | | | IT 1062054 B | 25-06-1983 |
| | | | SE 359536 B | 03-09-1973 |
| JP 63188385 | A | 03-08-1988 | NONE | |